owed Charlie a back payment to reimburse him for those underpayments.

(1) *Example 3: where participant dies during certain period.* Charlie died with three years of payments remaining. Ellen survived Charlie and lived at least another three years. We pay Ellen the remaining three years of payments. As explained in § 4022.91(b), because Ellen is entitled to survivor benefits under the certain-and-continuous annuity, we would pay Ellen the back payment for the underpayments to Charlie (and for any underpayments to Ellen).

(2) *Example 4: where participant and surviving beneficiary die during certain period.* Charlie died with three years of payments remaining. Ellen survived Charlie and lived another year. We paid Ellen one year of payments. Ellen designated Jean to receive any payments we might owe for periods after Ellen's death. Jean survived Ellen and lives at least another two years. We pay Jean the remaining two years of payments. As explained in § 4022.91(b), because Jean is entitled to survivor benefits under the certain-and-continuous annuity, we would pay Jean the back payment for the underpayments to Charlie (and for any underpayments to Ellen).

(3) *Example 5: where participant dies after certain period.* Charlie died after receiving seven years of payments. As explained in §§ 4022.91(b) and 4022.93, because benefits do not continue after Charlie's death under the certain-and-continuous annuity, we would pay the back payment to the person(s) Charlie designated to receive any payments we owe him at the time of his death in case he died after the end of certain period. If Charlie did not designate anyone to receive those payments or his designee died before him, we would pay the back payment to the person(s) surviving Charlie in the following order: spouse, children, parents, estate and next of kin.

APPENDIX A TO PART 4022—LUMP SUM MORTALITY RATES

Age x	q_x
12	0.000000
13	0.000000
14	0.000000
15	0.000000
16	0.001437
17	0.001414
18	0.001385
19	0.001351
20	0.001311
21	0.001267
22	0.001219
23	0.001167
24	0.001149
25	0.001129
26	0.001107
27	0.001083
28	0.001058
29	0.001083

Age x	q_x
30	0.001111
31	0.001141
32	0.001173
33	0.001208
34	0.001297
35	0.001398
36	0.001513
37	0.001643
38	0.001792
39	0.001948
40	0.002125
41	0.002327
42	0.002556
43	0.002818
44	0.003095
45	0.003410
46	0.003769
47	0.004180
48	0.004635
49	0.005103
50	0.005616
51	0.006196
52	0.006853
53	0.007543
54	0.008278
55	0.009033
56	0.009875
57	0.010814
58	0.011863
59	0.012952
60	0.014162
61	0.015509
62	0.017010
63	0.018685
64	0.020517
65	0.022562
66	0.024847
67	0.027232
68	0.029634
69	0.032073
70	0.034743
71	0.037667
72	0.040871
73	0.044504
74	0.048504
75	0.052913
76	0.057775
77	0.063142
78	0.068628
79	0.074648
80	0.081256
81	0.088518
82	0.096218
83	0.104310
84	0.112816
85	0.122079
86	0.132174
87	0.143179
88	0.155147
89	0.168208
90	0.182461
91	0.198030
92	0.215035
93	0.232983
94	0.252545
95	0.273878
96	0.297152
97	0.322553
98	0.349505
99	0.378865
100	0.410875
101	0.445768
102	0.483830
103	0.524301

Age x	q_x
104	0.568365
105	0.616382
106	0.668696
107	0.725745
108	0.786495
109	0.852659
110	0.924666

Age x	q_x
111	1.000000

[61 FR 34059, July 1, 1996; 61 FR 36626, July 12, 1996. Redesignated at 65 FR 14753, Mar. 17, 2000]

APPENDIX B TO PART 4022—LUMP SUM INTEREST RATES FOR PBGC PAYMENTS

[In using this table: (1) For benefits for which the participant or beneficiary is entitled to be in pay status on the valuation date, the immediate annuity rate shall apply; (2) For benefits for which the deferral period is y years (where y is an integer and $0 < y \le n_1$), interest rate i_1 shall apply from the valuation date for a period of y years; thereafter the immediate annuity rate shall apply; (3) For benefits for which the deferral period is y years (where y is an integer and $n_1 < y \le n_1 + n_2$); interest rate i_2 shall apply from the valuation date for a period of $y-n_1$ years, interest rate i_1 shall apply for the following n_1 years; thereafter the immediate annuity rate shall apply; (4) For benefits for which the deferral period is y years (where y is an integer and $y > n_1 + n_2$), interest rate i_3 shall apply from the valuation date for a period of $y-n_1-n_2$ years; interest rate i_2 shall apply for the following n_2 years; interest rate i_1 shall apply for the following n_1 years; thereafter the immediate annuity rate shall apply.]

Rate set	For plans with a valuation date On or after	For plans with a valuation date Before	Immediate annuity rate (percent)	Deferred annuities (percent) i_1	i_2	i_3	n_1	n_2
1	11–1–93	12–1–93	4.25	4.00	4.00	4.00	7	8
2	12–1–93	1–1–94	4.25	4.00	4.00	4.00	7	8
3	1–1–94	2–1–94	4.50	4.00	4.00	4.00	7	8
4	2–1–94	3–1–94	4.50	4.00	4.00	4.00	7	8
5	3–1–94	4–1–94	4.50	4.00	4.00	4.00	7	8
6	4–1–94	5–1–94	4.75	4.00	4.00	4.00	7	8
7	5–1–94	6–1–94	5.25	4.50	4.00	4.00	7	8
8	6–1–94	7–1–94	5.25	4.50	4.00	4.00	7	8
9	7–1–94	8–1–94	5.50	4.75	4.00	4.00	7	8
10	8–1–94	9–1–94	5.75	5.00	4.00	4.00	7	8
11	9–1–94	10–1–94	5.50	4.75	4.00	4.00	7	8
12	10–1–94	11–1–94	5.50	4.75	4.00	4.00	7	8
13	11–1–94	12–1–94	6.00	5.25	4.00	4.00	7	8
14	12–1–94	1–1–95	6.25	5.50	4.25	4.00	7	8
15	1–1–95	2–1–95	6.00	5.25	4.00	4.00	7	8
16	2–1–95	3–1–95	6.00	5.25	4.00	4.00	7	8
17	3–1–95	4–1–95	6.00	5.25	4.00	4.00	7	8
18	4–1–95	5–1–95	5.75	5.00	4.00	4.00	7	8
19	5–1–95	6–1–95	5.50	4.75	4.00	4.00	7	8
20	6–1–95	7–1–95	5.50	4.75	4.00	4.00	7	8
21	7–1–95	8–1–95	4.75	4.00	4.00	4.00	7	8
22	8–1–95	9–1–95	4.75	4.00	4.00	4.00	7	8
23	9–1–95	10–1–95	5.00	4.25	4.00	4.00	7	8
24	10–1–95	11–1–95	4.75	4.00	4.00	4.00	7	8
25	11–1–95	12–1–95	4.75	4.00	4.00	4.00	7	8
26	12–1–95	1–1–96	4.50	4.00	4.00	4.00	7	8
27	1–1–96	2–1–96	4.50	4.00	4.00	4.00	7	8
28	2–1–96	3–1–96	4.25	4.00	4.00	4.00	7	8
29	3–1–96	4–1–96	4.25	4.00	4.00	4.00	7	8
30	4–1–96	5–1–96	4.75	4.00	4.00	4.00	7	8
31	5–1–96	6–1–96	5.00	4.25	4.00	4.00	7	8
32	6–1–96	7–1–96	5.00	4.25	4.00	4.00	7	8
33	7–1–96	8–1–96	5.00	4.25	4.00	4.00	7	8
34	8–1–96	9–1–96	5.25	4.50	4.00	4.00	7	8
35	9–1–96	10–1–96	5.25	4.50	4.00	4.00	7	8
36	10–1–96	11–1–96	5.25	4.50	4.00	4.00	7	8
37	11–1–96	12–1–96	5.00	4.25	4.00	4.00	7	8
38	12–1–96	1–1–97	4.75	4.00	4.00	4.00	7	8
39	1–1–97	2–1–97	4.50	4.00	4.00	4.00	7	8
40	2–1–97	3–1–97	4.75	4.00	4.00	4.00	7	8
41	3–1–97	4–1–97	5.00	4.25	4.00	4.00	7	8
42	4–1–97	5–1–97	4.75	4.00	4.00	4.00	7	8